

radiation of negative electricity. Oxygen is at the top of the series, and carbonic acid at the bottom.—Reflective power of metals and glazed mirrors, by E. Hagen and H. Rubens. The authors study the reflecting powers of silver, platinum, nickel, steel, gold and copper for the various parts of the visible spectrum. They also test various speculum metals. That of Brandes and Schünemann has a reflecting power of only 50 per cent., but is eminently durable. It consists of 41 parts copper, 26 nickel, 24 tin, 8 iron and 1 antimony. Mach's aluminium-magnesium alloys have the highest reflective power.—Electrostatic effects in connection with vacuum discharges, by J. Stark. When a continuous current is sent through a vacuum tube, and matters are so regulated that the discharge is only just able to pass, the current becomes a periodic one. The kathode is set into a state of vibration, and gives a musical note. The vibrations are due to the periodical attractions of the charges on the wall of the tube.

### SOCIETIES AND ACADEMIES.

#### LONDON.

**Royal Society, December 7.**—"Polytrema and the Ancestry of Helioporidæ." By Prof. J. W. Gregory, D.Sc. Communicated by Prof. Ray Lankester, F.R.S.

The Blue Coral, *Heliopora caerulea* (Pall.) is one of the most isolated of living animals. It is the only known species of its genus, and it has recently been described as the only member of its family. Some Palæozoic corals have a very similar structure; but the view that these extinct Heliolitids are allied to the Helioporids is strongly opposed by some eminent palæontologists. If these authorities be right, then *Heliopora* is an animal with no close living relations and with no known ancestors. The only fossil that has been regarded with any probability as a possible link between *Heliopora* and the extinct Heliolitidæ is the Cretaceous coral *Polytrema*. This genus was founded by d'Orbigny in 1849, but unfortunately its affinities and structures are still in doubt.

In preparing a description of a new species of *Heliopora* from Somaliland, the author was led to examine the material in the British Museum collection. The results seem to confirm the old view of the affinity between the Heliolitidæ and the Helioporidæ, by showing that *Polytrema* is truly intermediate between the two families. In that case *Polytrema* is of considerable phylogenetic interest as an ancestor of *Heliopora*.

**Linnean Society, March 15.**—Mr. G. M. Murray, F.R.S., in the chair.—Prof. Farmer exhibited (as lantern-slides) several photographs of dissections of flowers, and made remarks on the utility of such illustrations for teaching purposes.—Mr. R. A. Rolfe exhibited specimens and drawings of *Paphiopedilum*, both of species and hybrids, with their capsules, to illustrate remarks on the hybridisation of orchids.—Mr. I. H. Burkill gave an abstract of a report on the botanical results of an expedition to Mount Roraima, in British Guiana, undertaken in 1898 by Messrs. F. V. McConnell and J. J. Quelch. Acknowledged authorities on plant-geography had considered it probable that the vegetation of the summit of Mount Roraima, when better known, would compare well with that on the Paramos of Venezuela; but this was not the case. The characteristics of the treeless Paramos were absent from Roraima; and *Bonnetia Roraimae*—the commonest of species on the summit—attained, where sheltered, a height of forty feet. Lower than the Paramos on the slopes of the Andes was the *Befaria* zone, and to this the upper flora of the mountain was to be ascribed, the rest of the vegetation being of a Brazilian type. Many of the plants collected were of anatomical interest; the huge mucilage-cells of the leaf of *Bonnetia Roraimae* and the quaint pitchers of some of the *Utriculariæ* were especially noteworthy. The complex chain of mountains to which Roraima belongs includes other peaks of similar height, such as Duida over the Upper Orinoco; but in this direction the chain terminates with the low-lying forests of the Casiquiare, which has barred immigration from the higher Andes. The additions to botanical knowledge now made by Messrs. McConnell and Quelch might be said to emphasise the remarkable similarity which had been found to exist in the floras of Roraima and the Kaieteur Savannah.

**Zoological Society, March 20.**—Dr. W. Blanford, F.R.S., Vice-President, in the chair.—Prof. F. Jeffrey Bell exhibited a collection of Land-Planarians made by Dr. Goeldi in Brazil.

This, like many other collections of Land-Planarians, had been confided to Prof. Graff for description, and some of the specimens were the types of new species described by that author in his magnificent monograph on these animals. The collection before the Society had been sent to Mr. Slater with the request that he would deposit it in the British Museum, where it would be a valuable and welcome addition to the already good collection in that institution.—Mr. G. A. Boulenger, F.R.S., exhibited a specimen of *Polypterus lapradii*, Steindachner, with large external gills, recently brought home from the Senegal by M. P. Delhez. The fish measured 390 millimetres, and was therefore the largest on record in which this larval character had been retained. In connection with this interesting example, Mr. Boulenger also exhibited a full-grown female of the Common Newt (*Molge vulgaris*), from the environs of Vienna, bearing well-developed external gills.—Mr. S. L. Hinde read a series of field-notes on the mammals which he had met with during five years' residence in East Africa, and illustrated with lantern-slides from photographs of the animals taken in their native surroundings. Some of the points specially dwelt upon were the preservation of game-animals in East Africa, and the possibility of the acclimatisation of East African animals in the British Isles.—Mr. W. Bateson, F.R.S., exhibited a specimen of an Isopodous crustacean, *Asellus aquaticus*, in which one of the antennules was replaced by a well-formed mandible. The case was to be regarded as an instance of Homœosis, or the transformation of one organ into the likeness of another with which it is in serial homology.—A communication was read from Mr. F. P. Bedford on the Echinoderms collected by himself and Mr. W. F. Lanchester in Singapore and Malacca.—Mr. F. E. Blaauw gave an account of the Zoological Garden of Berlin and of the progress which it had made under the management of the last three Directors—Dr. Bodinus, Dr. Max Schmidt and Dr. L. Heck.

**Royal Meteorological Society, March 21.**—Dr. C. Theodore Williams, President, in the chair.—Reference was made to the loss which the Society had sustained by the death of Mr. G. J. Symons, F.R.S., and a note of condolence with his relatives was passed by the meeting.—Twenty-seven new fellows were elected, as well as two honorary members, viz. M. Albert Lancaster, Director of the Belgian Meteorological Service, Brussels, and General M. A. Rykatcheff, Director of the Central Physical Observatory, St. Petersburg.—The following papers were read:—The ether sunshine recorder, by Mr. W. H. Dines.—Remarks on the weather conditions of the steamship track between Fiji and Hawaii, by Captain W. W. C. Hepworth.—Comparison by means of dots, by Mr. A. B. MacDowall.

#### PARIS.

**Academy of Sciences, March 26.**—M. Maurice Lévy in the chair.—Deviation of the radiations of radium in an electric field, by M. Henri Becquerel. Previous experiments on the behaviour of that portion of the radium rays deviable in the magnetic field showed that this part of the radiation had the greatest analogy with the cathode rays. To demonstrate the complete identity of these two kinds of rays, it was necessary to establish the existence for the rays from radium either of a transport of a negative charge or a deviation in an electric field. M. and Mme. Curie have recently proved the existence of the former property, and in the present paper experimental proof is given of the latter.—On apparatus in fused quartz, by M. Armand Gautier. Remarking on the paper of M. Dufour in the last issue of the *Comptes rendus*, M. Gautier recalls that he used tubes and spirals of quartz in 1869. In conjunction with M. Moissan, the author attempted, unsuccessfully, to prepare quartz connecting tubes for the fluorine apparatus.—On the transformation of fat into glycogen in the organism, by MM. Ch. Bouchard and A. Desgrez. In previous papers, it has been shown that a person receiving no food may gain as much as 40 grams in an hour, a gain for which it is only possible to account by assuming an absorption of oxygen above that required for the formation of respiratory carbon dioxide. The hypothesis was put forward that this increase of weight is due to an incomplete oxidation of fat, probably to glycogen. The experiments now given show that it is the muscular, and not the hepatic glycogen which arises from the incomplete oxidation of fats.—M. Hittorf was elected a correspondent for the section of physics in the place of the late M. Wiedemann.—Remarks on an earthquake at Batavia on September 30, 1899, by the French Consul at Batavia.—On surfaces for which the lines of curvature

of a system are equal, by M. A. Demoulin.—Remark on a note of M. A. Korn, entitled "On the method of Neumann and the problem of Dirichlet," by M. W. Stekloff.—On the liquefaction of mixtures of carbon dioxide and sulphur dioxide, by M. F. Caubet. Eight gas mixtures of varying composition were studied. The results are exhibited in the form of curves.—Limited chemical reactions in homogeneous systems. The law of moduli, by M. A. Ponsot.—On the selenide of zinc and its dimorphism, by M. Fronzes-Diacon. Since blende occurs both in hexagonal and cubical forms, and the selenide of zinc obtained by M. Margottet belonged to the cubic system, the author attempted to prepare an hexagonal form. The crystals obtained by the interaction of zinc chloride vapours and hydrogen selenide diluted with nitrogen belonged to the hexagonal system.—On the hydrated peroxides of barium, by M. de Forcrand. A thermochemical paper.—A new compound of antipyrin with mercuric chloride, by MM. J. Ville and Ch. Astre. The compounds obtained are of the type  $2(C_{11}H_{12}N_2O).HgR_2$ , where R represents the halogen.—On the constitution of isolauroic acid, by M. G. Blanc.—On the combination of basic with acid-colouring matters, by M. A. Seyewetz.—On the law of separation of hybrids, by M. Hugo de Vries. The experimental results given are wholly covered by the following law: if D be the grains of pollen or ovules having a dominant character, and R those which have a retrograde character, the number and nature of the hybrids is represented by the formula

$$(D+R)(D+R)=D^2+2DR+R^2,$$

in which D and R are equal; that is to say, there will be 25 per cent. of D, 50 per cent. of DR, and 25 per cent. of R.—Concerning the contradictory results of M. Raphaël Dubois and M. Vines on the supposed digestion in Nepenthes, by M. E. Couvreur. The assumption of a proteolytic ferment in such carnivorous plants as the Nepenthes is unnecessary, and the author upholds the correctness of the views of Dubois as against those of Vines.—On the foldings of the Paris basin, by M. Munier-Chalmas.—Characteristics of a specimen of petroleum shale from the Megalong Valley, by M. Eg. Bertrand. A comparison of the microscopical appearances of the Blackheath and Megalong Valley shales.—Comparative estimation of alcohol in the blood of mother and foetus and in the milk after the ingestion of alcohol. Remarks on the estimation of alcohol in blood and in milk, by M. Maurice Nicloux. The ingested alcohol passes from the mother to the foetus and is also present in the milk. The proportions of alcohol in the blood of mother and foetus are practically identical.—The absorption of iodides by the human skin, by M. F. Gallard. The arms and hands were immersed in the solution, and the iodine estimated in the urine.—On the comparison of the barometric movements (at latitude 50° of Greenwich meridian) caused by the movements in declination of the sun and moon, by M. A. Poincaré.

## DIARY OF SOCIETIES.

THURSDAY, APRIL 5.

- ROYAL SOCIETY, at 4.30.—On the Weight of Hydrogen desiccated by Liquid Air: Lord Rayleigh, F.R.S.—Combinatorial Analysis: The Foundations of a New Theory: Major MacMahon, F.R.S.—Über Reihen auf der Convergenzgrenze: Dr. E. Lasker.—Extinct Mammalia from Madagascar. 1. *Megaladapis insignis*, sp. n.: Dr. C. I. Forsyth Major.—The Kinetic Theory of Planetary Atmospheres, Part I.: Prof. Bryan, F.R.S.—Observations on the Effect of Desiccation of Albumin upon its Coagulability: Prof. J. B. Farmer.
- ROYAL INSTITUTION, at 3.—Equatorial East Africa and Mount Kenya: H. J. Mackinder.
- MATHEMATICAL SOCIETY, at 5.30.—The Orthoptic Loci of Curves of a Given Class: A. B. Basset, F.R.S.—On Weierstrass's Canonical Reduction of a "Schar" of Bilinear Forms: T. J. Bromwich.—Communications by Prof. Burnside, F.R.S., and Prof. Love, F.R.S.
- LINNEAN SOCIETY, at 8.—*Sphenophyllum* and its Allies, an Extinct Division of the Vascular Cryptogams: Dr. D. H. Scott, F.R.S.
- CHEMICAL SOCIETY, at 8.—(1) The Liquefaction of a Gas by "Self-Cooling": A Lecture Experiment; (2) Note on Partially Miscible Aqueous Inorganic Solutions: G. S. Newth.—The Decomposition of Chlorates. II. Lead Chlorate: W. H. Sodeau.—The Interaction of Mesityl Oxide and Ethyl Sodiomethylmalonate: A. W. Crossley.—The Bromination of Benzeneazophenol: J. T. Hewitt and W. G. Aston.
- INSTITUTION OF ELECTRICAL ENGINEERS, at 8.
- Röntgen Society, at 8.—The Influence of the X Rays upon the Growth and Development of Micro-organisms: Dr. Norris Wolfenden and Dr. Forbes Ross.
- INSTITUTION OF NAVAL ARCHITECTS (Society of Arts), at 12.—On Large Cargo Steamers: Prof. J. H. Biles.—The Practical Results of some Innovations in Modern Shipbuilding: A. B. Wortley.—The Strength of Elliptical Sections under Fluid Pressure: Captain G. W. Hovgaard.—

On Yacht Measurements, together with some Remarks on the Action of Sails: H. C. Vogt.—At 7.—On the Balancing of Steam-Engines: Herr Otto Schlick.—The Engines of the Corvette *Jeneral Bagnedant*: M. Sandison.—On the Uniformity of Turning Moments of Marine Engines: Prof. Lorenz.

FRIDAY, APRIL 6.

- ROYAL INSTITUTION, at 9.—Solid Hydrogen: Prof. J. Dewar, F.R.S.
- GEOLOGISTS' ASSOCIATION, at 8.—Zonal Features of the Kentish Chalk-Pits between London and the Medway Valley: G. E. Dibbey.
- INSTITUTION OF CIVIL ENGINEERS, at 8.—Experiments on Struts with and without Lateral Loading: H. E. Wimperis.
- MALACOLOGICAL SOCIETY, at 8.—On the Genus *Acavus*: (a) from an Anatomical Standpoint: W. B. Randles; (b) from a Conchological Standpoint: E. R. Sykes.—Description of a New *Bulimulus* from Parana, Brazil: J. Cosmo Melvill.—Anatomical Notes on *Neptunopsis gilchristi*, Sowerby, and *Volutilithes abyssicola*, Adams and Reeve: M. F. Woodward.
- INSTITUTION OF NAVAL ARCHITECTS, at 12.—The Pressure on an Inclined Plane, with Special Reference to Balanced Rudders: Prof. H. S. Hele-Shaw, F.R.S.—On the Action of Bilge Keels: Prof. G. H. Bryan, F.R.S.—On the Influence of Depth of Water on the Resistance of Ships: Major Giuseppe Rota.—At 7.—On Mysterious Fractures of Steel Shafts: Signor Roberto Schanzer.—Corrosion and Failure of Propeller Shafts: A. Scott Younger.

SATURDAY, APRIL 7.

- ROYAL INSTITUTION, at 3.—Polarised Light: Lord Rayleigh.

MONDAY, APRIL 9.

- VICTORIA INSTITUTE, at 4.30.—Egyptian Chronology: Rev. Dr. F. A. Walker.

TUESDAY, APRIL 10.

- INSTITUTION OF CIVIL ENGINEERS, at 8.—The Development of the Manufacture and Use of Rails in Great Britain: Sir Lowthian Bell, Bart., F.R.S.—The Wear of Steel Rails in Tunnels: Thomas Andrews, F.R.S.
- ROYAL PHOTOGRAPHIC SOCIETY, at 8.—The Municipal Encouragement of Photography: Thomas Bedding.

WEDNESDAY, APRIL 11.

- ROYAL ASTRONOMICAL SOCIETY, at 8.

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